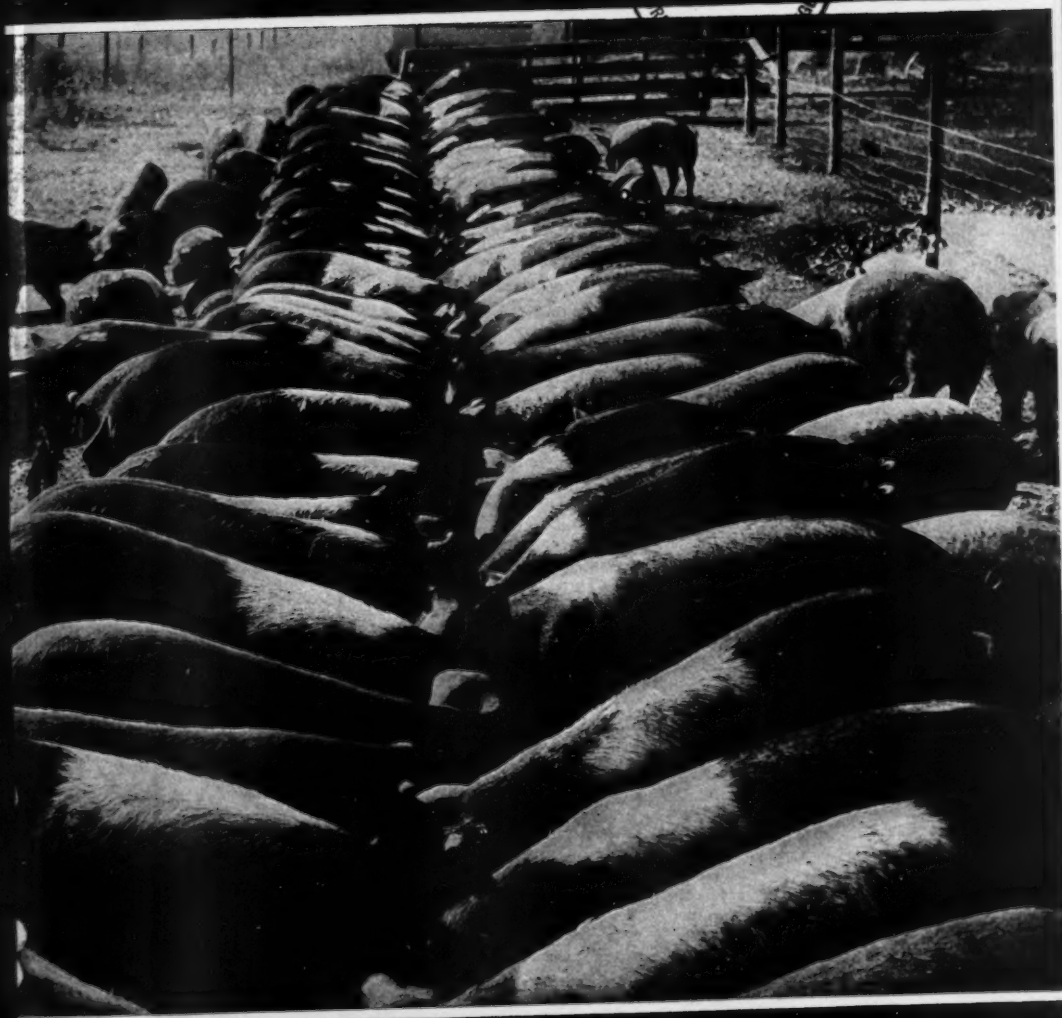
ELECTRICITY on the FARM

The National Magazine of Rural Electrification

JANUARY

Brooders in Pig Management
Charging Storage Batteries
Winter Care of Water Systems
War Story of the Nesmas Farm
Good Wiring—Good Investment
Electric Equipment Loan Club
Electricity in Homekeeping

1944



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Editor's Chat

ELECTRICITY IN MANAGEMENT

Starting now, we are going to direct our editorial program more and more toward electricity in farm management. The material may not be much different from what we have been printing. It will be about Bob Smith and how he saved labor and money with a milk cooler over the way he used to wrangle ice; about FFA boy Billy Jenks, who built an electric brooder and cleaned up fifty bucks on broilers; or about the Snassville Experiment Station that found that electrically burning the beaks off birds makes their egg pedigrees better. What we are going to do is to call your attention more often to the fact that these are just good practical engineering aids to farm management. Electricity on a pole in your yard is valueless; put to work in the right way it can make money and save labor for you and enable you to do some things you could not do otherwise—water under pressure in all the farm buildings with practically no attention, for instance. It is often little things electricity does that make the difference, like a winter light in a hen house; a warmer to keep the drinking water from freezing. We believe that too many of us have thought about electricity as just something to operate a machine or an appliance. It is getting beyond that. It is a tool of farm and home management that can make life in the country more profitable, pleasant and agreeable. In future issues we are going to point out *where* electricity fits into the management programs of farms and *how* it must be fitted in order to give the labor saving, increased production, improved quality and better living that is possible.

GUM FLOORS

Just as you go down the stairs from the north corner of 33rd St. and 6th Ave. or out of Gimbel's tunnel to the subway and Long Island Station in New York, you land on a floor as bumpy as a New Orleans cobblestone pavement. It's gum. Here is where New Yorkers rushing to or from trains drop their spent gum. Or possibly it is squeezed out of them by the pressure of the mob that makes the 5:15. It is not sticky. It does not give or spread much under foot. It just gets black with New York dirt and stays there. I wonder if it might not last longer as a surfacing material than the stone or steel steps that must be replaced now and then; or it might make a good cow barn floor. Do you chew?

NEW START

1943 is past. All of the 1943 years and some B.C. years are gone and behind us. What's done is done. But here is a new year—fresh, clean, and all before us.

Each year many who had not done so before, make great and worthwhile contributions to the world, their fellow men, their communities, their families, their professions. The opportunities are ahead, not back. That in itself is encouraging and stimulating—even for common folks like you and me. That hero with the Congressional medal who turned the tide of the attack and saved his company from destruction, was just one of the boys from back on the farm.

It's a new year. It may be the most momentous one in the history of the world. The war may end, and the difficulties of making a just and lasting peace begin. There will be readjustments for all the world and most of the people in it. These adjustments will not miss the farmer. It is a national election year. Upon that election may depend the social, financial and political welfare of every one of us. It is the year when labor dictatorship in this country may stumble over returning soldiers and break its neck.

It looks like a year for action and decisions based on straight thinking. Winter frosts are purging away the past and mellowing the fields for new seeds and new harvests. If the thing we should have done yester-year is still undone—this is a new year.

George Kable

ELECTRICITY ON THE FARM
The National Magazine of Rural Electrification

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YOU Might Have Saved 106 8-hour days in '43 with a MILKING MACHINE

This average saving in time (2½ hours a day), reported by America's 310,000 milking machine owners to the Bureau of Agricultural Economics, U. S. D. A., is more than enough to plow, plant, cultivate, and pick mechanically 100 acres of corn.

THE 310,000 owners of milking machines in this country know the value of this time-saving equipment in wartime. Last year they saved 210-million man hours for other work. That saving in time is one of the key reasons for America's milk production holding its own so well in spite of farm help shortages.

IF YOU are the fortunate owner of a McCormick-Deering Milker, we urge you to take the best possible care of it. When new parts are needed, insist on getting Genuine IHC Parts from the International Harvester dealer.

What about NEW McCormick-Deering Milkers? We expect a substantial supply to be manufactured within the next few months. See the International Harvester dealer about the availability of new milkers and McCormick-Deering Cream Separators; also, about how to make application for an International Milk Cooler.

Whatever your problem — whether it is making your present McCormick-Deering Milker do for the duration or making application to purchase a new machine—you will find McCORMICK-DEERING QUALITY will see you through.

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ELECTRICITY on the FARM

ELECTRICITY: *Versatile Energy for Many Farm Uses*

Power—Light—Heat—Electronics. Easily adapted, started, controlled: automatic. Labor doer and saver, money maker, and product improver and increaser. Used intelligently, it changes the whole aspect of farm life and production.

JANUARY 1944

Winter Care and Maintenance of Farm Water Systems

By **NORMAN J. RADDER**
Plumbing and Heating Industries Bureau, Chicago

EVERY winter many pumps and electric water systems are damaged by freezing. Such accidents with few exceptions are preventable. This year, with both farmers and manufacturers experiencing a shortage of help, we must take every precaution to prevent unnecessary losses that interfere with war production.

In suggesting protective measures for winter protection of water systems, there are two classes of installations to consider:

Those in exposed locations, such as unheated farm buildings and summer cottages.

Those protected by their location in basements or well pits.

Don't take chances with water systems in exposed locations. With the first approach of freezing temperatures, such water systems should be carefully drained.

To drain shallow well or suction type pumps and water systems, open all drain plugs and leave them open until the pump is returned to service. Plunger type shallow well pumps may have drain plugs for both suction and discharge chambers. Open both and run the pump for a few strokes so as to release any water that may be entrapped above the valves. If water drains or siphons back to the pump, disconnect the pipe line.

If water service is to be discontinued for a period, such as in summer homes, it is advisable to drain the complete system, including the pressure tank and suction and discharge piping. Sometimes the tank will not drain properly unless the plug in the top of the tank is opened. If there is no drain in the bottom of the tank, it will be necessary to either pump out the tank or upset it. A suction line will not drain if equipped with a foot valve. In such cases the suction line should be disconnected at the well.

Deep Well Pumps

Some deep well water systems are made frost-proof by means of an underground discharge connection, which permits mounting the pump head at the surface.

S.A.E. No. 20 light crank case oil should be used in such pumps so as to insure proper lubrication in freezing weather.

Fortunately most water systems are permanently housed in frost-proof shelters such as basements and well pits, where no special attention is required in winter. The principal danger of such installations freezing arises from failure to close a door or window, or the well pit cover.

Provide Against Coldest Weather

Most people, however, provide only enough frost protection for their water systems to take care of normal winter weather. Extreme low temperatures or protracted cold spells call for further precautionary measures. These measures may include:

Additional insulation, such as corn fodder or straw over well pit covers and basement windows.

The introduction of heat, such as placing a high wattage lamp or an oil burner in the well pit.

Maintaining circulation, such as by keeping a faucet partly open. These emergency measures will also help to protect exposed pipe lines.

Surprising as it may seem, water systems installed in extreme northern latitudes seldom freeze. People living in that section of the country have a wholesome respect for "Old Man Winter." They do not take chances with the weather man. If all water system owners will observe reasonable precautions, there should be few losses from damage this winter.

"I would like to point out that war is a good deal like soil erosion on a gigantic scale. The forces that cause war, like those that cause soil erosion, are always there, and the only way to keep them from getting a start and tearing things to pieces is by intelligent planning and everlasting work."

Claude Wickard,
Sec. of Agriculture

Electric Brooders in Pig Management

Or More "Rooters" for Our Side

If a Pig Dies, 140 Pounds of Feed Is Lost—Brooders Increase Live Weaners 30½ Percent—What the Brooder Does—How to Make and Use Them

By GEO. W. KABLE

"ELECTRICITY: Versatile energy for many farm uses. Used intelligently, it changes the whole aspect of farm life and production." Did you see that statement in our new masthead on the opposite page? They are more than just words. They are facts upon which you will base profits in years to come. It is often the little things that electricity can do to improve management that makes the big difference in final results. Remember that! This article is one example.

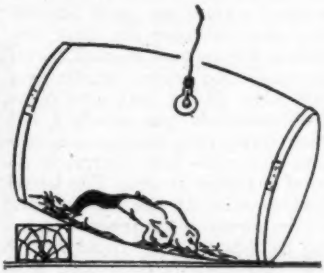
"To show the importance of saving every possible pig or hog being raised this year, the USDA

The chick brooder is moved into the farrowing pen several days before the pigs come. It must be high enough so the sow cannot touch any exposed heating wires.

points to these figures of feed lost whenever a pig dies: Each pig farrowed dead represents the loss of 140 pounds of feed. Each pig farrowed alive but dying at weaning time costs 120 pounds of feed more. . . . The feed loss for each pig is cumulative from the time the sow is bred until the death of the pig. . . . 14.3 percent of the total feed used was consumed by pigs that failed to reach market . . . such large losses are the rule rather than the exception."

This quotation from a USDA release tells only part of the story. In addition to this loss of feed, you have lost your labor, part of the use of your houses and equipment and possibly some hauling. If you end up with six pigs instead of eight, you have lost one-fourth of your labor, housing and other costs.

In some experimental work conducted at Purdue University and reported in the February 1943 issue of ELECTRICITY ON THE FARM, it was found that of the death loss ordinarily occurring during the ten days following farrowing, 58 percent came in the first 24 hours and 93 percent in the first three days. They also found that "An average of 1½ more pigs were saved per litter when electric heaters were used. This amounted to 30.5 percent more pork on the way at weaning time."



Small barrels with one head knocked out are tipped so the front edge is on the floor. Straw is placed in the barrel and a 150 watt lamp on a cord that drops through the bunghole.

That pretty well defines the problem, namely, getting the pigs safely through the first three days of their existence; and the answer, good management with electric heat.

You may say there is magic in that electric heat. The truth is that the farmer is the magician, if he is wise enough to use this simple application of electricity.

There are three things for a pig brooder to do to get those little squealers through the first few days. One is to dry them off quickly after they are born, another is to keep them warm so

A typical farrowing pen with the most commonly used type of pig brooder built in a corner. A 150 to 250 watt lamp in a reflector furnished the heat. Boards keep the sow away from pigs and lamp.

they will not have to snuggle up against the sow; and the third is to protect them so the sow will not crush them or eat them. The first two are accomplished by the electric heat and the third by the type of structure in which you

Pigs in comfort in the glow of a 660 watt radiant heater. One of the new reflector type heat or drying lamps would do the same job with less fire hazard.

place the heater. There are a number of ways in which different farmers have accomplished these three things. You will have to select the ones which best fit your needs. Just keep these three things in mind, and I will tell you about some of the different methods which have been used.

First there is Charlie Miller's chicken brooder and barrel method which is described by Howard Clapper of the Morrow Rural Electric Co-op.

Lamp-in-a-Barrel Method

"On the Charlie Miller farm near Lexington, Ohio, five brood sows, were due to farrow during the first two weeks of last February. The weather was unsually cold, zero and below, but Mr. Miller with the help of electricity and no little amount of ingenuity, saved every pig farrowed.

"Over the pen of the first sow due to farrow, Mr. Miller installed his electric chick brooder. The brooder was set up just high enough to clear the sow's back and she, without hesitation, proceeded to build her nest under the warmth of the brooder.

"A day or so after the new porkers arrived the chick brooder was installed over the next sow due to farrow and a small barrel placed in the corner of the first pen. Mr. Miller had seen plans for homemade pig brooders but time was short, labor was scarce and even nails were scarce, so he used available barrels. The barrel laid down on its side was fastened in the corner of the pen and tipped up so that the pigs could run in the open end. A drop cord with a 150 watt bulb was hung through the bung-hole and the little fellows soon found this new warm spot and laid there instead of crowding

Looking into a corner hover having an ordinary Mazda lamp in a conical shaped reflector.

A pipe guard-rail placed six inches out from the wall to protect the pigs with a 250 watt CX (ultra-violet and infra-red) lamp in an aluminum reflector as a heating unit. The CX lamp is an excellent one for the purpose

up to the sow and getting mashed or smothered as she turned over.

"This same procedure was followed for each of the five litters and out of 39 live pigs farrowed Mr. Miller raised and marketed 39 thrifty porkers. The cost of electricity was about 50c. per litter and Mr. Miller thinks the money was well spent.

" 'Without the help of electricity I certainly would have lost a large percentage of these pigs.'

In Mr. Miller's farrowing pens the chick brooder did the first job of drying the pigs and keeping the sow comfortable, and the lamp heated barrel did the No. 2 and 3 jobs of keeping the pigs warm and out of the way of the sow.

Ed Mitchell Has a Way

Ed Mitchell, versatile farm advisor for radio station WGY and farmer in his own right, has this to say: "First you want to build the pig brooder solid enough so the old sow won't push it over and knock it down. The chances of starting a fire are fair to middlin' if a lighted bulb lays in the straw any length of time. Next, you want a good reflector so a small bulb will throw the most heat where it will do the most good. A refinement of this reflector is to have it tilted out a little so the old sow will learn to lay with her belly toward the heat several days before the baby pigs arrive and the baby pigs feel the warmth and go toward it sooner than they would otherwise learn their way to the hover. Once the babies have learned where the hot spot is, the reflector may be turned straight down, and the old lady allowed to fend for herself. The pig brooder should also be a creep where the pigs can go but the sow cannot."

The illustrations show different methods of providing the drying

warming and protection of the pigs. All have been used successfully.

The lamps used are ordinary Mazda inside frosted bulbs varying in wattage from 150 to 300. The open type radiant heater shown in one of the pictures is 660 watts. In using such heaters, they must be kept away from the pigs and the litter to prevent shocks and fire. The distance that lamps are placed away from the pigs will depend on the wattage. They should be 16 inches or more from the floor. Test the heat by placing your hand where the pig's back would be. In colder climates and in the colder months, use larger lamps. Bear in mind that these lamps do not necessarily heat the air of the house very much. They warm the pigs by radiant energy, so the pigs must be able to get into the rays from the lamp.

A 250 watt R-40 Reflector type heat lamp.

If the lamp is fairly well up above the pigs, they can move toward or away from the center of radiation to suit their own comfort.

There are several relatively new types of lamps which lend themselves very well as pig warmers. These are reflector type lamps with the reflecting surface on the glass of the lamp which is itself reflector shaped. The R-40 wide angle, reflector flood Mazda of 150 watts sells for 95c; the R-40 250 watt reflector *drying* lamp lists at $1.75 and the R-40 250 watt reflector *heat* lamp lists at $2.00. The drying and heat lamps have an average life of 5000 hours; ordinary Mazdas, 1000 hours. The drying lamp has a brightness only about one-fourth that of the regular Mazda, and the heat lamp about one-twenty-fifth. These are excellent lamps for supplying heat. They are made by a number of different companies and your lamp dealer can get them for you. They fit into a regular lamp socket.

Protection for the pigs may consist of a simple rail along the side of the pen, some boards nailed across a corner high enough so the pigs can get under easily, or a hover with a top on it built in a corner. The hover gives protection to the pigs from drafts and helps save some of their body heat. Lower wattage lamps may be used than where there is no hover. The pigs may have to be placed in the hover several times until they learn where the heat is.

COVER ILLUSTRATION

Hogs represent dollars and food for fighters and the nation. Every litter-mate of these porkers that was chilled to death or crushed, as a pig represents a loss, not only of dollars, but of labor and valuable feed, of which we have too little.

Photo Courtesy Consumer's Guide, USDA

BETTER CARE—LESS REPAIR

Starting this month a concerted effort is to be made to get owners to give extra attention to the care of the electric appliances and equipment they own so they will last until they can get new ones. There are practically no new appliances available, and even when the war ends, it will take some time to manufacture them and get them to users. There is some talk of manufacturing a few electric irons, washers and refrigerators in 1944. There will not be enough to supply the demand, and the few that are made will probably go to institutions and large users. The safest thing is to take extra good care of what you have. Keep it clean, keep it oiled, keep cords and plugs in repair. If it is something you cannot fix, take it to a good repair man before it gets beyond repair.

This is the story ELECTRICITY ON THE FARM has been telling you for two years—with specific instructions. We remind you again.

Dimes to Fight Polio

Infantile paralysis is no respecter of persons or communities. It strikes in the country as well as in the cities, and it is one of the dread diseases of childhood and even mature life. Progress is being made in fighting the disease and in effecting cures when it hits. No small part of the progress is due to the dimes and dollars contributed to the National Foundation for Infantile Paralysis during the month of our President's birthday. Send contributions to The National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, N. Y. Any contribution from a dime up is acceptable.

Temporary Casting Repair

Welding is superior to babbitting for closing holes, but this sketch shows a method I have successfully used for closing holes in castings, and it is recommended for temporary work—when no welding equipment is available. This method is quicker than any other I have encountered. I have used ordinary babbitt metal, but ordinary lead or solder can be used just as well.

Merely place the broken part in a box of sand, as illustrated. Push

away enough of the sand from the edge of the hole so that the babbitt will securely clamp around the hole and catch both sides. Then pour the babbitt. Pouring babbitt is such a simple process that I feel I need not describe it here. Be sure, though, that the sand is dry. One of my babbitt repair jobs made more than 20 years ago is still good.

The babbit will not hold parts together. It just fills the hole.

W. F. SCHAPHORST, M.E.

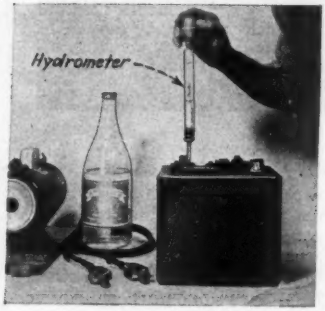
★ ***Buy War Bonds*** ★

Charging and Care of Storage Batteries

How to Build a Battery Charger at Home and Use it Intelligently—Charging Current Costs About One Cent Per Hour—Test for Polarity—Cut-Outs and Controls—Keeping Battery in Good Condition.

By J. B. STERE
West Penn Power Co., Pittsburgh, Pa.

CONTRARY to common belief, a storage battery seldom "lets you down" by failing over night. Battery trouble, which is usually because of neglect, can often be detected long before failure. To assure maximum life and satisfactory performance, inspect batteries monthly for corroded terminals, loose connections, level of the liquid in the cells, specific gravity of the liquid; and always keep a battery fully charged.



Check specific gravity of liquid monthly with a hydrometer. Keep cell plates covered (3/8" to 1/2") with liquid at all times (the liquid in the battery is commonly referred to as electrolyte). Use pure water (distilled or clean rain water) for refilling.

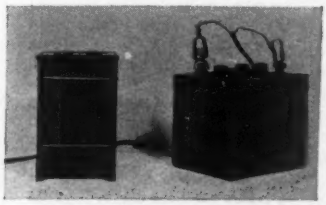
Corroded terminals indicate neglect. To prevent corrosion, cover cleaned terminals with vaseline.

To clean corroded terminals, remove battery and wash with a stiff brush and clean water. Then dry. (Do not use a flame.) If further cleaning of battery terminals and lead clamps is necessary, use wire brush or steel wool. Tighten lead clamps securely when battery is replaced.

From accompanying chart, it will be noted that a discharged battery will freeze at 18° F above zero, while a fully charged battery will not freeze until the temperature is 92° below zero. Keep the battery fully charged to prevent freezing. A battery not in use will slowly discharge. The rate of discharge is greater at high temperatures than at low. When not in use, a battery should be charged at least once each month until the liquid in each cell bubbles freely and the hydrometer indicates "full charged." Otherwise a hard crust will form over the plates and make it difficult if not impossible to charge.

KEEP BATTERY FULLY CHARGED TO PREVENT FREEZING

Hydrometer Reading	Freezing Point
1.100 (Discharged)	18°F
1.160 (Barely Operative)	1°F
1.200 (One-Fourth Charged)	—17°F
1.220 (Nearly Half Charged)	—31°F
1.240 (Half Charged)	—50°F
1.280 (Fully Charged)	—92°F



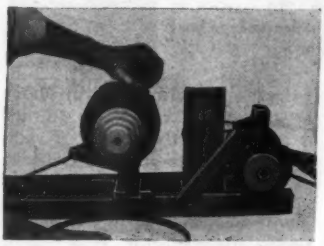
This electronic rectifier, which reduces 115 v alternating current (ac) to direct current of the proper voltage, is quiet, efficient, and carefree.

Keeping the Battery Charged

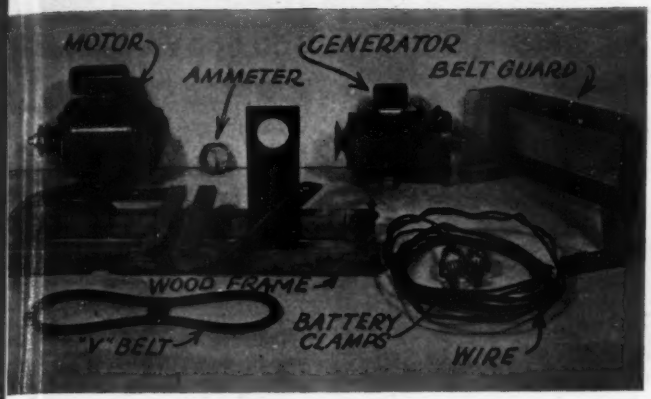
A battery is charged with direct current (dc) electricity at a voltage of approximately 10% above the normal voltage of the battery. This is produced by a rectifier or motor-driven generator.

Automatic Controls

The three types of automatic controls used with automobile generators are: (1) cut-out relay, (2) two-unit control consisting of cut-out relay and voltage-limiting device, and (3) three-unit control consisting of cut-out relay, voltage-limiting device, and current-limiting device. Of the three controls, the cut-out relay gives most satisfactory performance on a motor generator-set. The function of this control is to automatically disconnect the generator from the battery when the generator output is insufficient to charge the bat-



An inexpensive belt driven motor generator-set. Parts for this assembly are usually available on the farm, or can be secured locally at an approximate cost of $5.00 excluding the motor. This assembly is recommended for farm use since the portable motor drive permits use of the same motor that drives the corn sheller, grindstone, butter churn, sausage grinder, etc.



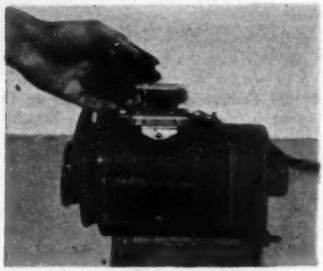
Parts for home-made motor generator-set. **Motor**—1,725 rpm, ¼ hp for a charging rate not to exceed 10 amperes. A ⅓ or ½ hp motor may be used. Equip motor with an overload protecting device. (See May, 1943, issue, Electricity on the Farm.) Automobile **Ammeter** having range of —20 to +20 amperes. **Generator**—a used auto, truck or tractor generator equipped with a cutout and air circulating fan. **Belt Guard**—take time to be safe and place guard around moving parts. **Wood Frame**—the style of wood frame construction will differ for various types of generator mountings. However, always provide for a portable motor mounting, so that the motor can serve other uses. **"V" Belt**—use size "A," 26" to 36" long. **Battery Clamps**—one clamp marked positive (+) and one marked negative (—). **Wire**—15 to 20 feet of No. 12 stranded wire or larger. If stranded wire is unavailable, solid wire can be used.

tery. A new cut-out relay costs about 70c.

The next step in putting the charger into use is to check the polarity of the generator leads as shown in the illustration on the next page.

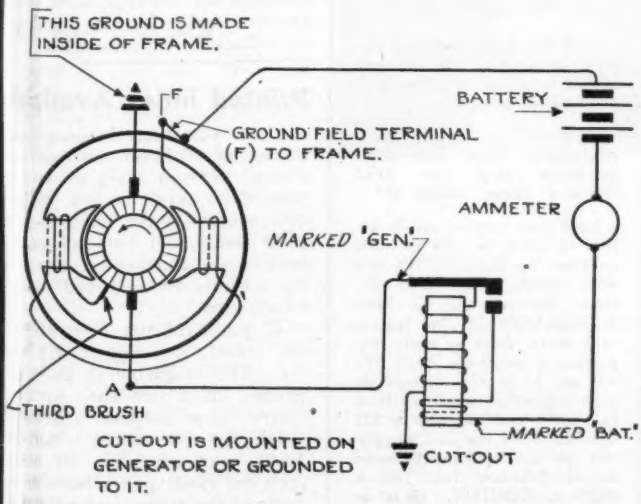
To check the correct direction of rotation, remove belt from generator and connect leads to a battery having some charge. Close the cut-out points manually and the generator will run as a motor. Note direction of rotation. Generator should be driven in this same direction.

Caution: Before using the generator for charging, the polarity of the leads should be checked as described above, as the battery current may have reversed the polarization of the generator.



Cut-out Relay. It may be mounted on generator or on wood frame. If mounted on wood frame, the cut-out must be grounded to the generator frame.

While generator is being operated as a motor, note ammeter reading. If reading is on the "charge" scale, reverse the leads to ammeter so as to register "discharge." When operated as a generator ammeter will then register "charge." After having determined the direction of rotation, recheck the polarity of the leads and attach battery clamps with proper symbol designation (+ or —) to each lead of the generator.

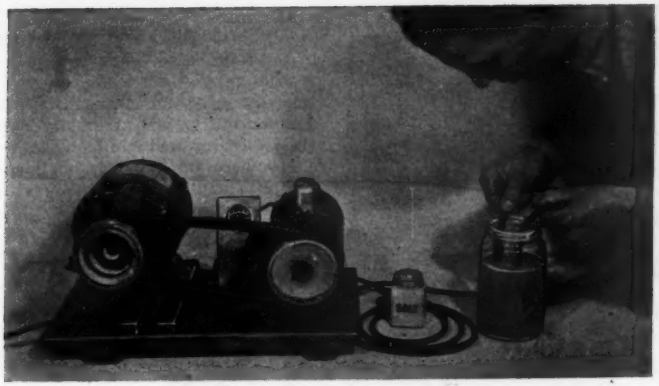


When a two or three-unit automatic control is used with a generator, two leads (A and F) are extended to the outside of generator frame. When only the cut-out is used, terminal (F) is grounded to the generator. If the generator is designed to use a cut-out, lead (F) is grounded on the inside of the frame, leaving only one terminal (A) on the outside, in which case the battery lead should also be connected to the generator frame as shown above.

Operating the Motor Generator-Set

Most generators reach maximum output when driven at 1,700 to 2,000 rpm. However, to prevent overheating, it is not desirable to operate a motor generator-set at maximum output because this type of generator is designed to be operated in an air stream. Further, a ¼ hp motor has not sufficient power for maximum output and it is also not desirable to charge a battery for a long period of time at such a high rate.

The charging rate of generators



Before connecting the generator to the battery, determine the polarity of the generator leads; that is, which is positive (+) and which is negative (—). To determine the polarity, start the generator and hold the leads one inch apart in a weak salt water solution. The lead which gives off bubbles freely is the negative (—) lead and should be connected to the negative (—) or the smaller post of the battery. The other lead is the positive (+) and should be connected to the positive (+) or larger post.

can be controlled by the following three methods:

By controlling the speed. This is the simplest and most desirable method of controlling output of a motor generator-set. A step pulley on the motor provides an easy method of changing generator speed. Pulleys of the same size on the motor and generator will operate the generator at maximum output but will require a larger motor than ¼ hp. A smaller pulley on the motor will reduce speed and output of the generator.

By placing resistance in series with the generator field windings. This is the method used on tractors where the output of the generator is adjusted by the light switch. It is also the method used for automatic voltage and current regulators.

By adjusting the third brush. Move the third brush in the direction of armature rotation to increase output and against rotation to decrease output. This adjustment should be used only as a last resort since factory setting is usually most desirable.

Charge the battery at the rate recommended by the battery manufacturer. Where this recommendation is not available, a good rule is to charge at ⅛ of the battery ampere-hour rating (usually marked on battery).

Operating cost—The operating cost of a ¼ hp motor at full load is approximately 1c an hour.

Earn War Stamps for ELECTRICAL EQUIPMENT SUGGESTIONS

Our equipment suggestion forum continues until February 1. The subjects are:

1. What new electrical device, equipment or process would help you in your farm production program?

2. What is wrong with equipment that has been available that has kept farmers from using it?

Send your suggestions in answer to either or both of these questions to ELECTRICITY ON THE FARM, 24 W. 40th St., New York 18, N. Y. Mark SUGGESTION at the top of each sheet. Send as many suggestions as you have ideas. We will pay $1 in War Stamps for each suggestion which we think has merit, and will give a $25 War Bond for the best suggestion (in our opinion) received before February 1st. This is NOT A CONTEST. It is an effort to get constructive comment which will make electricity more helpful to you after the war. Suggestions are welcome from everyone.

Manufacturers to Mak 500,000 Water System

With the object of assuring th production of about 500,000 ele tric water systems in the first yea after Victory, a comprehensive in dustry-wide program of postwa planning was adopted at a meetin of the National Association o Domestic and Farm Pumpin Equipment and Allied Produc Manufacturers at the annual mee ing in Chicago on October 15.

The goal of the program rep resents a substantial increase i the production of electric wate systems over the peak prewar yea of 1941 when more than 347,00 electric water systems were manu factured and sold.

Manufacturers of electric water systems are believed to be among the first organized groups of manufacturers to adopt a comprehensive program of planning to assure a high level of production and employment in the postwar period, according to Herbert C. Angster, secretary-director.

The objectives of the program are to provide useful peacetime jobs for the armed forces and civilians immediately after the end of the war and to enable dealers to meet the expected unprecedented demands for water systems from farmers and suburban residents as well as the export market.

Printed Index Available

Have you been keeping your copies of ELECTRICITY ON THE FARM? If you have, we will be pleased to send to you without cost a copy of the index for the 1943 issues. It lists all of the articles and cross-references them by subjects covered and by author's name.

If you have not been keeping the copies, we suggest that you do. The magazine is purposely printed in a size easy to keep. Every issue contains articles of value for permanent reference. Each year we print an index. You can easily punch holes at the back of the copies and bind them together in cardboard covers for keeping. They make a valuable library on electrical farming.

—I'm proud I am a farmer!—

A Story of the Naumans

A Typical Farm Family Who Drafted Electricity in Their "Food Battle" on the Home Front

By **HOWARD CLAPPER**

ON the evening of March 12, 1943, two men sat in the dimly lighted kitchen of just an ordinary farm home. One of the men hitched his chair up closer to the table and in the yellow light of an old oil lamp carefully wrote LeRoy Nauman, Fredericktown, Ohio, RFD No. 2, on an application for electric service from the power lines serving his community. Turning to the other man he said simply, "My chicks are coming next Wednesday."

"Okay," said the other, the company's rural service man, "we have authorization from the local USDA War Board to build an extension up your lane; you have your priority for wiring materials, so first of the week our boys will be here to start work and in the meanwhile you better get that electrician busy."

The next Wednesday, the chicks, a new brooder, and electricity arrived almost simultaneously, and that night the kitchen in this farm home was aglow with light.

Fine! But I Want More

On September 22nd these same two men met in the barnyard of this same farm home and the rural service man with a foot on the rubber-tired wheel of a wagon load of good hog corn lost no time in asking "How do you like your electricity?" "F i n e," said the other, "and I'd like it better if I could use a little more of it." From here on the two men talked, and out of that talking came the following story, a story of the Naumans, a typical farm family, and a typical U-l-c extension.

Now, there's nothing unusual about the extension, just a 400′ span of primary line, a couple of guys and anchors, a 1½ KVA transformer, and two service wires running to the house.

But of the Naumans, there are eleven. Junior, age 22; Jack, 20; Richard, 19; George 17; Dale 16; Joane 11; Janene 9; Donna Rae 7; Wayne 6; and Dad and Mom make eleven.

Early in the war Richard joined the Navy and during 1942 with Junior and Jack both home, the Naumans operated their 155 acre farm, farmed 90 acres on shares, and did custom work on another 45 acres of crop land. In 1942 their livestock added up as follows:

6 milk cows, 200 baby chicks (pullets and cockerels), 150 laying hens, 100 ewes, and 5 brood sows.

Then in January 1943 Junior and Jack both answered Uncle Sam's "Call to the Colors" and they are now in the Army Air Corps working for "those silver wings."

What happened to the farm this

Mrs. Nauman and one of her electric brooded pullets.

year? Well, minus Junior and Jack, with the same tools and machinery, but *PLUS* electricity, the farm is producing more than ever. In fact, there's even more farm. An adjoining 106 acre farm was purchased and is being operated in addition to the acres farmed in '42; there are still six milk cows, but this year 250 sexed pullets grew up under an electric brooder and there are 300 pullets and hens for winter egg production, 150 ewes will lamb next spring and the farm now boasts 8 brood sows.

The Naumans are keeping up chiefly by working longer hours and with electric light on tap, the chores are now invariably done after dark and they're done easier and quicker than ever was possible before. As Mr. Nauman says, they can't use a lot of juice because they can't get much equipment, but in the house a used washer and iron help Mrs. Nauman; a used motor has been found for the corn sheller and then there is the electric brooder which raised 250 Rhode Island Red pullets on 115 kilowatts-hours of electricity, or a little less than half a kilowatt-hour per chick. So electricity is helping and it will help more, for as the one man turned to go the other cast a longing eye on the unwired sheep barn some 400′ away; he pointed out a second brooder house, and asked about the availability of brooders, and "I'm thinking," he said, "about more cows, a new milk house, and a milking machine."

The Naumans with an eye to the future and looking forward to the day when the boys come home are already planning a 1944 Food Production Campaign that'll top all previous efforts, and so help us, we wish 'em the best of luck. Who're we? We're just the other guy, the rural service man.

The Cow

LONDON, Oct. 29—Ernest Brown, Minister of Health, read today the following essay he received from a ten-year-old London East End boy who had been evacuated to the country:

"The cow is a mammal. It has six sides, right and left and upper and below. At the back it has a tail on which hangs a brush. With this he sends flies away so they don't fall into the milk. The head is for the purpose of growing horns and so his mouth can be somewhere. The horns are to butt with and the mouth to moo with. Under the cow hangs milk. It is arranged for milking. When people milk, milk comes and there never is an end to the supply. How the cow does it I have not yet realized but it makes more and more. The cow has a fine sense of smell and one can smell it far away. This is the reason for fresh air in the country.

"A man cow is called an ox. The cow does not eat much but what it eats it eats twice so that it gets enough. When it is hungry it moos and when it says nothing at all it is because its insides are full up with grass."

★ WARTIME STRATEGY ON THE FARM ★

"Electricity helped me double production

Meet Charles F. Wendig, owner and operator of a *completely electrified* poultry farm near New Hope, Pennsylvania.

Read what Mr. Wendig has to say about how *electricity helped him double his production*—in spite of the manpower shortage.

Perhaps Farmer Wendig's story will give you some good ideas on the time-and-labor-saving applications of electricity—as an aid to wartime production on *your farm!*

CORN SHELLER—"It used to take *two men* an hour to shell 10 bushels of corn with a hand sheller," says Mr. Wendig. "Now, *one man* shells 50 bushels an hour with a sheller driven by a 2 H.P. portable motor. Figuring labor at 50¢ an hour and electricity at 2.5¢ a kilowatt-hour, *we save $4.45 in shelling 50 bushels.*"

HAMMER MILL—"When we ground feed by tractor power, the fuel cost alone was *$1.20 per ton of feed.* Since we began using this small grinder, driven by a 2 H.P. portable motor, the power cost has dropped to *30¢ a ton.* That's not the only saving . . . for now our tractor can spend more time at work in the fields."

uction without extra hired help!"

FEED MIXER—"Formerly, we mixed poultry feed by hand—a long, tiresome job—for it took *2 hours* of hard shoveling to mix a ton. Now I mix a ton in *40 minutes*, at a cost of 1¼¢ for electricity. I save 1 hour and 20 minutes of a man's time . . . worth about 66¢ . . . and get a more uniform blend of feed, too!"

LAYING HOUSE—"Electric lights increase our hens' working day and their egg production—there's no question about it! My lights go on automatically about 3 hours before daylight. Personally, I don't think it helps to turn on the lights *after sundown* . . . so our laying houses are dark until next morning."

WATER SUPPLY—"Our 2000 chickens drink about 100 gallons of water a day. It used to take a man *3 hours* to pump and carry that much water by hand. Now, this electric water-supply system pumps and 'carries' water to the drinking fountains for ¼¢ a day. At 50¢ an hour for labor, we save about $1.50 a day."

EGG GRADER—Says Herman Otte, brother-in-law of Mr. Wendig: "When we graded eggs by hand-scale, the most we could do was *100 dozen an hour*. Now, we grade twice as many . . . *210 dozen an hour* . . . for less than a penny's worth of electricity. We get more uniform grading and cut the labor cost in half!"

FREE! "Farm Motors" book and 12 Westinghouse Farm Bulletins, filled with helpful suggestions on how electricity can help you cut labor costs and get more farmwork done in wartime. Just check the ones you want and mail the coupon, *today!* Westinghouse Electric & Manufacturing Company, Pittsburgh, Pennsylvania.

Westinghouse

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WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
(Dept. EF-14)

Rural Electrification, 306 Fourth Avenue, Box 1017, Pittsburgh 30, Pennsylvania

Please send me *free* "Farm Motors" booklet ☐—also send *free* Farm Bulletins on the application of electricity to the subjects checked below:

☐ *Cooking, Canning, and Preservation of Food*
☐ *Beef Cattle* ☐ *Crops* ☐ *Clothing* ☐ *Handicraft*
☐ *Home Improvement* ☐ *Sheep* ☐ *Poultry* ☐ *Swine*
☐ *Rural Electrification* ☐ *Truck Gardening*
☐ *Dairy Cattle*

Name .....

Address .....

Good Wiring is a Good Investment

Article 5. "Topsy" Wiring Systems That Get Dangerous—How Planning Saves Current and Money and Insures Safety—Some Miscellaneous Examples of Bad Wiring That Cost Money

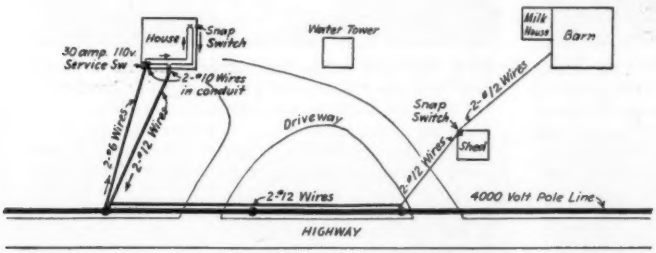
MANY farm wiring systems in this country have "just grown" like Topsy. They started out to furnish lights in the house. Then some appliances were bought; then a light was wanted in the barn, a brooder in the hen house or an electric hotbed in the garden. Each time the wires were extended. When the poor little overextended wires just can't carry any more you complain to the company. "What's wrong with your electricity? It won't—" But here are some actual examples. They come from Mr. M. C. Whithead, Farm Service Representative of the Atlantic City Electric Co.

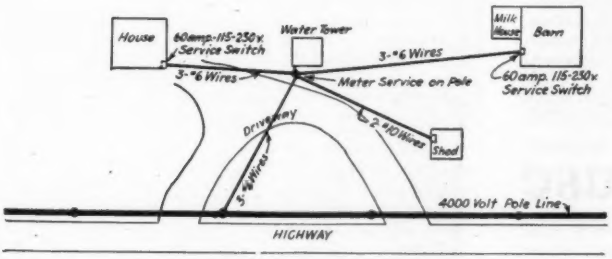
Example of "Topsy" Wiring

This first farm is an example of a typical Topsy wiring system. Two No. 6 wires were first run from one of the Company's poles along the highway to a pair of No. 10 wires leading in to a 30 ampere, 110 volt service switch in the house. Mistake number one was that that service switch had no connection to ground as required by the Code for safety. Next, a No. 14 wire was run from the entrance switch to an ordinary wall snap switch at the kitchen door. From here the No. 14 wire was run back through the walls of the house to the front where the two No. 14's were attached to a pair of No. 10's in a conduit through the wall and these to a pair of No. 12's which ran back to the Company's pole, down the road two poles and to a shed. Changing wire sizes without inserting a fuse was bad; running that No. 14 wire through the house walls and a light switch to supply the barn load was a serious hazard; but running those wires beneath the Company's 4000 volt line on the poles without a ground connection at house or shed was an outright invitation to disaster. In the shed, where there should have been a grounded service entrance, there were only little snap switches which controlled the lights in the barn and a milk cooler in the milk house. This was the wiring when Mr. Whithead was called out to find out what caused the milk cooler motor to burn out.

A new wiring layout was made as shown in the revised sketch. It took a year, however, to convince the owner that the changes should be made. He had not been killed nor had his house burned down. The Lord certainly is merciful to some of us. The change was finally made when the milk cooler motor had burned out often enough to run the replacement cost up to $150.

In the new wiring, which has now been installed, the Company's line runs to a pole near the water tower. This is the center of load on the farm, and the tower contains a 1½ horsepower gas engine driving a pump, which will someday be replaced by a motor. From this farm load center, wires run to the house, the barn and to the shed. If a brooder house or hotbed were to be served later, wires could be run from this pole so that wires already carrying their full load would not need to take the addition. The service at the pole is adequately grounded and none of the circuit wires are smaller than No. 10. The barn





MEET THE AXEES
The Gremlins of Accidents

Axees aren't at all angelic,
And that includes this smarty, Elec.
He play's tricks with loose connections,
Frayed lamp cords and your neglections.
Watch him; you can't hear him knocking;
Keep him out—his conduct's shocking!
NATIONAL SAFETY COUNCIL

and house now each have three wire 115-230 volt, 60 ampere service with service entrance switches and good grounds. The distance from milk cooler to entrance service is now 140 ft.; formerly it was 620 ft. The wiring has been inspected and approved by the fire underwriters. The cost was less than for replacing the motors that were burned out due to low voltage. The fire hazards have been removed along with the wastage of electricity in heating those small wires and switches. The farmer is pleased with his wiring and equipment because he no longer has troubles with low voltage, dimmed lights and wrecked motors.

Range and 2 Water Heaters Operated on Current Wasted

On another New Jersey farm the owner had a 3 hp and a 2 hp motor. The wires were so small that only one motor could be run at a time. Other appliances were in about the same fix—short of current. The current, however, was being used to heat up these small wires in their effort to supply the motors. The monthly bills were running around $15. This farm was rewired at a cost of about $100. At the same time an electric range and one 30 gallon and one 50-gallon electric water heater was installed. The monthly bills after rewiring and installing the range and water heaters was no higher than before. They had been wasting that much current in the small wires.

Another farm had a large hotbed with 9 kw of heating cable installed. Where hotbed cables are spliced, the joints should be waterproofed and adequately protected so there can be no current leakage into the ground. These were not. When the ground was wet from rain, the leaking current got into the water pipes and gave one a shock in the bathtub and prevented the cows from drinking from their drinking cups. After the hotbed was reconstructed and the wire joints made leakproof, the power consumption dropped off 1000 kw-hrs the following year. Part of this was probably due to milder weather, but a good part of it was saved by stopping the current leakage to ground.

A similar leak to ground was discovered on a farm that had an underground service to the garage. This cable was poorly installed and leaked current to the ground. When this line was cut off, the bill dropped $5 per month.

Wires that rub on trees until the insulation is rubbed off are also a source of danger and expense. When the trees are wet, current leaks through the trees to ground. You may not know it but you are probably paying for it.

Mr. X wanted an electric brooder. The wire to the brooder house was small and he was advised that it should be replaced. He thought he would try it. One brooder worked OK so he put in three. The chicks chilled and the brooders would not heat up. The service man who investigated found a drop of 28 volts from the switch to the brooders in the small wire. The fuses were hot and the insulation on the wire melted and stuck to the wall. There was nothing wrong with the brooders. The trouble was with the man who thought he might carry a wagonload of current in a baby carriage.

Electric Equipment Loaners' Club

By RAYMOND DONOVAN

DID your toaster break down this morning? Or your vacuum cleaner or some other electric household equipment that you sorely needed and depended upon?

If it did and you were living in either Lincoln Park, Towaco, or Mountain View, New Jersey, you could replace the equipment quickly by simply picking up your phone and calling the Electric Equipment Loaners' Club.

Your phone call would be answered by Bruce Vitale, thirteen years old. You'd tell him which piece of equipment you needed. The time of your call, the kind of equipment you want and the time for which it is promised you is all noted, in a record book and you can be sure the equipment will be at your home at the time promised.

The Loaners' Club was organized by Evelyn Dierkes, fourteen years old, Bruce Vitale, and Paul Dierkes, twelve. Paul is really a wizard at repairing household electrical equipment and deserves credit for putting more than one piece back into service after it had been discarded as useless.

Other members of the organization include: Beverly Vitale, seven, Helen O'Brien, fifteen Francis O'Brien, six, Stanley Fou- . . . . . (More on page 21)

Electrical Housekeeping

Edited by **GAIL MEREDITH**

Laundry Methods

By **ELIZABETH SWEENEY**
College of Home Economics, Syracuse University
From a radio talk over WGY

THE time and thought saving devices on modern electrical appliances have probably helped as much as any one thing to provide relief from the nagging little worries which keep so many women housewives rather than homemakers.

These devices extend from your heat regulated, clock-controlled range to the humble little electric alarm clock. I have a friend who makes a dozen uses of such a clock each day. Her laundry is in the basement. When she has started a washer load of clothes on its way to whiteness, she sets the electric alarm for the required washing period and goes about some short task up in the kitchen, with complete confidence that she will be summoned when needed.

More than half the homemakers in the country launder at home, but in many cases it is one of the least efficiently performed of household jobs. Women apply step-saving principles in arranging their kitchens. They can in their laundries, too. It helps so much to have enough counter space for ease in sorting clothes and in removing stains. Electric outlets located conveniently to the washer and ironer are essential. So is a light, near at hand, well shaded and of useful brightness.

Washers Do the Hard Work

Electric washers have taken over the hard work of wash day but fastidious homemakers still perform a few careful little chores. Handkerchiefs scalded in a soap, salt, and ammonia solution require a little electric hot plate for a part of the laundering unit. It's useful in making starch, too.

Some washers have a timing device which rings a warning when the washing time has elapsed. Many women think this matter of washing time unimportant. It is really very important. Few articles require more than twelve minute's washing time in an electric machine and some finer pieces need only seven or eight. You know one can overwash clothes. The soapsuds eventually break down and so wash soil back into the clothes if the machine is operated for too long a period. We are all prone to overdo a good thing. Using too much soap is a wasteful but common washing temptation. A one and a half or two inch suds gives best results. Too much soap can actually result in inefficient operation. Work saving appliances can only give their best service when we use them wisely.

Doubtless some of you do only part of your work in the basement. A housewife I know has her electric ironer in the sewing room up on the second floor. She declares it is a great convenience because about two thirds of her ironing is stored upstairs.

If you use an electric iron rather than the ironer, I hope you have one of the thousand watt, light weight irons—of course with temperature control. That is very important today with the abundance of synthetic fabrics which must be ironed with dependable low heat. The steam electric irons are very useful in the care of clothing. When its possible to press garments without the bother of damp cloths, we find it an easy way of reducing clearner's bills—a welcome economy.

Wobbies

Hollanders behind their dikes bristling with German guns have just given the world the first new vegetable to appear in a generation. It is the "wobbie," a cross between the carrot and a beet. According to the Netherlands Press Agency in London the wobbie contains three to four times more Vitamin C than either carrots or beets.

Consumers Guide October, 1943

Cedar Paper for Closet Walls

THE new cedar paper for closet walls comes with its paste on its back. That removes one of the biggest stumbling blocks in the way of getting the paper from the roll to the wall for the most of us. To give one of your closets a new lining that will cover up cracks or crumbled plaster and look a lot like wood, handrubbed, satiny red cedar, is a fairly simple thing.

The paper with its adhesive base comes boxed in rolls 48 feet long and 15 inches wide.

The manufacturer claims that anyone can do a closet single handed with no more intricate tools than a pair of kitchen shears, a razor blade, a yard stick, a clean soft sponge, a plumb bob you can make by tying any small, heavy object at the end of a long string, —and access to a tub or sink of water.

The first step is to measure and cut the strips for walls and ceilings, as well as for the inside of the door if it is a flush door, and you want it covered like the rest. You couldn't paper smoothly over a door with panels up and down and cross wise.

Roll up each strip as you are ready to use it, cedar side out, and dip it in a tub of cool water. Let it soak till paste on the back is thoroughly wet. Then hold the roll up over the tub, lengthwise till the water stops dripping.

Unroll the strip right on the wall, about a foot at a time, pressing it flat as you go with the palm of your hand. When you have the strip on the wall, go over it and smooth it out with a wet sponge.

This paper does not make the closet moth proof, but it does give it smooth attractive walls and a clean, fresh cedar odor.

It is made by Trunz Company, Inc., 1012 South Spalding Ave., Chicago, Ill. Rolls 15 in. wide and 48 ft. long sell for $2.00.

Dyne

Wisconsin dairy farmers are loyal to butter. They are anxious to keep a market for butter even in the face of that 16 point handicap. For more than a year Dr. K. G. Weckler, University of Wisconsin professor of dairy industry, has been working to develop an acceptable spread made entirely of dairy products that people might use until butter is plentiful again.

The product of this research has now gone on the market in Madison, Wisconsin under the name of Dyne. It is controlled by the Wisconsin Alumni Research Association which has already licensed local dairies to manufacture Dyne and will doubtless make it available throughout the country. The Federal Government has authorized its sale without ration points.

Everyone connected with Dyne insists that it is really an entirely new dairy food, as distinctive as ice cream, and that it should not be looked upon merely as a butter substitute.

Ask Your Dealer Now About The

NEW F&W MULTI-STAGE EJECTOR PUMP

● IMPROVED performance on lifts 20 to 120 feet are provided by this new F&W centrifugal pump. May be installed directly over well, or in basement, connected by horizontal piping outside. Completely automatic, including exclusive new control valve which requires no manual setting or adjustment.

Other F&W ejector pumps for medium deep and shallow wells, afford complete selection for each individual need. Advanced engineering, simplified design assure quiet, dependable operation. Compact units, deliver more water. Write now for free literature on the complete F&W line—no obligation.

F&W WATER SYSTEMS

The "Bullet" for shallow wells, streamlined, efficient, dependable.

FLINT & WALLING MFG. CO., INC.

195 OAK ST. KENDALLVILLE, IND.

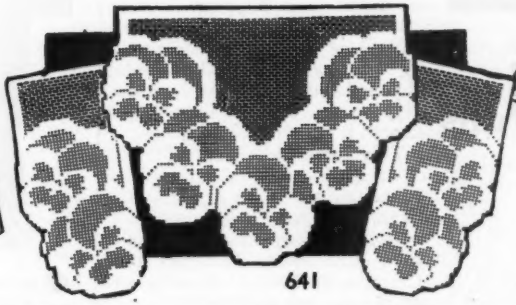
PATTERNS
For the New Year

Pattern 9467—Trim two-piecer with soft-cut bodice. Sizes 34 to 50. Size 36 requires 3⅞ yards 39 inch fabric, 16¢.

Pattern 641—Pansy flowers in filet crochet chair set. Pattern contains full details, 11¢.

Pattern 4406—Frock or sunfrock, both smartly beruffled. Sizes 2 to 10. Size 6, sunfrock requires 1⅞ yards 35 inch fabric; frock, 2⅝ yards 35 inch fabric and ¼ yard contrast, 16¢.

Send orders with coins enclosed to ELECTRICITY ON THE FARM, 196 Pattern Dept., 243 W. 17th Street, New York 11, N. Y. Allow plenty of time.



It is white, not yellow, and about the consistency of Philadelphia cream cheese beaten up with thick cream. Because of the shortage of paper cartons, it is being sold so far in wide mouthed cream bottles. It doesn't taste like butter, nor does it taste like cheese. It has a mild pleasing flavor all its own.

Dyne is made of cream, milk, culture buttermilk, lactic acid, salt and a flavor derived from cultured buttermilk. The proportions are like this: butter fat, 26%; milk solids not fat, 16%; salt, 1%; moisture, 56%. Vitamin A and Vitamin D have both been added to the spread.

Besides using Dyne on bread, some Madison women are using it with vegetables and in their baking. On crackers, with jelly or jam, with chopped chives mixed through it, Dyne has had a wide and favorable acceptance. It is a natural for frostings made with butter and powdered sugar. Some women are using half Dyne and half their usual shortening in drop cookies with complete success. One pastry cook who always adds a couple of tablespoons of butter to the lard in making pie crust, is using Dyne instead, and finds the results excellent.

You cannot fry with Dyne, as you might expect from its low fat content.

Everyone likes it beaten into mashed potatoes, and over hot vegetables, though it took some women a little time to get over expecting it to melt as butter does. One woman has mixed it thoroughly with grated cheese, the final grating of all the nubbins that accumulate in the best managed refrigerators, and spread it on bread and toasted the bread in the oven. A spoonful of Dyne dropped in top of a bowl of cream soup the last minute before serving gives an appetizing flourish to the dish.

"Your electric stove is just like the one I have in the city except you have something to cook on yours."

FCA reported repayments of principal on land bank and Commissioner loans of more than $300,000,000 in 1942.

Equipment Loaners' Club

(Here from page 17)

tas, thirteen and his sister Christine Foutas nine years old.

Members of the Loaner's Club had collected scrap iron, newspapers, rags, etc. One day in early summer during the search for scrap, Bruce found an old discarded vacuum cleaner and the idea of the Loaner's Club was born. He consulted Paul Dierkes and his sister Evelyn who lived near by. Paul toyed with the vacuum cleaner until he had it working and the Loaner's Club had its first piece of equipment. The three of them quickly rounded up old electrical equipment in their homes which was not in use at that time.

In three weeks they had two small radios, three vacuum cleaners, a radiant heater rescued from a junk pile, an electric cooker, several toasters, several electric irons, four small electric fans, several extension cords of various lengths, sandwich toasters, electric waffle irons, an electric mixer ten years old, and five small electric motors of various horsepower.

In three months the club has had two hundred and eighty six calls for equipment of one kind or another from farm homes.

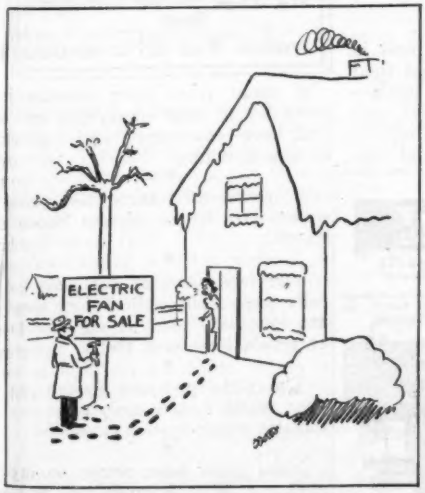
There is no charge for the service of the club, but each person borrowing does make payment in war stamps, giving an amount they think the service is worth. No cash is accepted. The highest payment has been two dollars in stamps for the loan of a vacuum cleaner for a week. The lowest payment a ten cent stamp for the loan of a toaster for one day. As soon as the club collects $18.75 in stamps it is converted into a bond. Each member expects to have a bond.

Project Efficiently Managed

When the organization first started the parents were skeptical, thinking that while the idea was new the children would keep up interest and that their interest would peter out in a short time as other things came along. The kids surprised everybody by not only keeping interested in their war project but in improving it constantly and running it on a businesslike basis. School has cut into the time they can devote to their project yet they are carrying on with more enthusiasm and efficiency than ever.

Excellent care is taken of every piece of equipment. When a piece is returned from a borrower it is cleaned and oiled and then stored in a special room in the Dierkes barn.

Bruce Vitale says that if there is any other group of children who would like to organize a project of this type he will be glad to answer any questions and help them organize if they will write to him in Lincoln Park, N. J. He requests that they enclose return postage.



"Stop being foolish, of course, it will get warm again!"

College Corn

The corn crop of the United States is an excellent example of how scientific research and education combine with labor to improve agriculture. A nationwide survey in 1942 revealed that 44.8 per cent of our 91,098,000 acres of corn were

THERE'S A "BEST" IN WATER SUPPLY, TOO

Increase FARM OUTPUT and LIVING SATISFACTION with APCO "Pump-Master" WATER SUPPLY SYSTEMS

Write for BULLETIN 112 Describing APCO LIFE-TIME SERVICE

You can afford to be lavish with the clear, sparkling, running water an APCO Master-Line Water System gives you at a turn of the faucet. These outstanding units are the Products of Experience made by exclusive builders of fine pumps. Simply install and enjoy. Completely automatic, quiet, nonpulsating and LASTING.

VALUE that CHALLENGES COMPARISON

★ The highest development of the Turbine-Type Pump. Utterly simple.
★ Lifts water 28 feet. Delivers 40% more water than rated capacity from basement and ground faucets.
★ 325 G. P. H. Other models up to 2400 G. P. H. with storage tanks. Also gasoline engine driven units.
★ Top quality specifications. Satisfaction guaranteed.

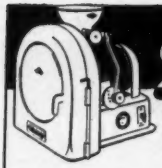
SHALLOW WELL
Aurora Pump production for war service commands our complete attention, thus the present availability of APCO Water Systems is considerably limited.
DEEP WELL

BUY WAR BONDS — AURORA Always PUMPS — GROW MORE FOOD

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA PUMP COMPANY

88 Loucks St., AURORA, ILLINOIS



Save LABOR TIME-MONEY!

JUST PUSH A BUTTON TO GRIND YOUR OWN FEED

SAVE LABOR — Make more minutes count. A Viking Mill helps you get more done in less time, with better results.

SAVE TIME—Just fill the hopper and snap a switch — the Viking Mill grinds grain while you do other work.

SAVE MONEY—Have more nutritive fresh ground feed daily, for as little as 1¢ per 100 pounds.

Thousands in use, enthusiastic owners everywhere.

RIGHT NOW — Get yours while a few are being made. Order a Viking Hammer Mill or write for information—TODAY!

Viking

VIKING MANUFACTURING COMPANY
219 EAST WASHINGTON ST. JACKSON, MICHIGAN

planted with hybrid seed developed as a result of research. In the Corn Belt, 71.6 per cent of the total acreage was in hybrid corn. The increase in yield, due solely to the use of hybrid seed was 629,364,000 bushels, or about a 20 per cent increase.

Objective of Rural Electrification

"We ought to have a two-fold objective. One part of that objective is to see that electricity is taken to the rural homes of America as fast as practicable—the other is that we do everything possible to see that those homes that have electricity make a maximum use of it from the standpoint of the benefits that are being derived. . . . After the last gun is fired there is going to be a great demand for agricultural products in this country."—Secretary of Agriculture Claude R. Wickard.

Do You Blanket Your Motor?

How does one go about taking good care of a motor? Well, in the first place it should be kept clean. When a motor is working it generates heat. If the air passages around the coils become clogged with dirt and dust, then air cannot circulate through the motor to cool it and the motor will overheat. The effect is the same as that of driving a car with a blanket over the radiator. Furthermore, accumulated dirt will enter the bearings and other working parts to cause extra friction and wear. This is especially true if the dirt becomes oily.

Dr. Forrest B. Wright, Cornell University.

Nutritive Food Units Per Farm Unit

If an abstract nutritive unit is set up to measure the total food value of a product in one lump—inclusive of food energy, fat, calcium, iron, vitamin A, thiamin, ascorbic acid, riboflavin, and niacin—it is found that soybeans produce more such units per unit of total farm resources utilized to grow them than anything else.

You could produce 806 nutritive units per unit of land, labor, and all farm resources utilized, by raising soybeans. The units for some other common crops as a basis of comparison would be 89 for milk, 34 for eggs, 79 for hogs, 44 for beef cattle, 121 for wheat made into white flour, 470 for wheat made into whole-grain flour, 331 for sweet potatoes, 248 for dry beans, 170 for peanuts, 163 for beets, 37 for cucumbers, 242 for grapefruit, and 43 for strawberries.—USDA.

Have You Any Paper Logs?

There is a critical shortage of paper in the U. S. Newspapers and magazines such as ELECTRICITY ON THE FARM have had to reduce their sizes and weights, and face further reductions. One hope of getting through the next six months is for farmers in the vicinity of paper mills to cut a few extra logs from wood lots for making paper. If you have the trees, the time and the market you can help—and make some extra money doing it.

It's the little things that make the difference

A spout from your overhead grain bin to your small feed mill will save you hours and hours of time grinding.

•

A power-off alarm bell will waken you if the current should go off.

•

You feed sows all the year to raise pigs. Three die before they are four days old. A pig brooder would help save them.

•

The little pressure switch on your water system makes the automatic water system possible.

•

Hens must have water to lay eggs. A little warmer will keep water at a good temperature in spite of freezing weather.

TRUMBULL BROODING EQUIPMENT
Designed and Constructed for Dependable Results

TRUMBULL All-Weather Brooder

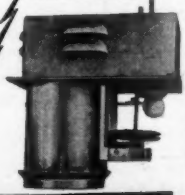
Capacity 300 to 400 chicks $37.95

The conditions under which your chickens are brooded will determine how they develop, live and produce. Properly heated fresh air as provided by Trumbull Brooders means higher livability, more uniform growth and the robust health necessary for sustained egg production. Trumbull is cooperating with poultrymen by manufacturing Brooders and Brooderators to the full quotas established by Government authority.

The TRUMBULL ELECTRIC MFG. CO.
1012 Woodford Ave.
Plainville, Conn.

TRUMBULL Brooderator

To be installed in homemade hover, $19.80. Instructions included.



A GENERAL ELECTRIC ORGANIZATION

By
JEROME J. HENRY

Report to the Nation

"Report to the Nation" has become a top-notch news program, passing on global happenings with realistic dramatizations.

Hundreds of famous personages have appeared on its mikes. On one day, for example, Mrs. Franklin Delano Roosevelt was a guest—and so were Eddie Cantor and Guy Kibbee and Eric Sevaried. Wendell Willkie has been on the show many times. So has Maj. Alexander de Seversky, imporant foreign correspondents—both from New York, and every other capital in the world.

Doug Edwards, Narrator of Report to the Nation.

The man behind the program is Paul White, Columbia's dynamic director of news broadcasts. White originated the show and, with his assistants, makes it the driving, exciting, authentic program that it is. Writers are Bill Slocum, Jr., and Margaret Miller. The sponsors are 151 electric light and power companies. Here's the routine:

Rough drafts of the coming Tuesday's program are made on Friday. The sketches are written on Saturday and Sunday. Monday, a working script is presented to Earle McGill, the program's director, and to Victor Bay, musical director. When we say "working script," we mean that in the loosest sense of the word. At the last minute—right up to airtime—news is breaking and must be covered.

Tuesday, the day of the broadcast, a dress rehearsal is usually held from 8:45 until 9:15 p.m.

"Report" goes on the air each Tuesday night at 9:30 EWT on the Columbia Broadcasting System over a coast-to-coast network.

The electrical part of the program consists of facts about the everyday business of producing electricity for the nation.

The Corner Drugstore Is Best

Janice, Ma O'Neill's teen-age daughter in the serial, "The O'Neills," is played by Janice Gilbert, who in real life is Mrs. William Herbert Miles, who recently celebrated her first wedding anniversary.

The romance of Janice and her young husband, a war production engineer, proves that life is stranger than fiction. For Janice is one of the most-travelled of the youthful actresses around Radio City. She has been in almost every corner of the world. She has traveled on the palatial steamers whose world cruises offer excellent opportunities for romance.

But she met her Prince Charming in the neighborhood drug store. That is, he saw her there and asked the proprietor her name, and next day presented himself to the NBC offices to meet her.

Sapphire and *ruby* are varieties of the mineral corundum which is aluminum oxide; they differ only in color.

The members of the armed forces are consuming some 40,000 gallons of *oysters a week*, a gallon holding from 150 to 450 eastern oysters.

VOGEL
FROST-PROOF HYDRANTS
- Demand constantly growing
- 50,000 already in use
- Ideal for farms
- Will never freeze

Your nearest supply house handles Vogel Hydrants or writeus direct for complete information.

JOSEPH A. VOGEL COMPANY
Wilmington 99, Delaware

Write for a free copy of this kitchen-planning booklet.
Now is a good time to PLAN your "kitchen of tomorrow." In such planning, your range will play an important part—and that is why we suggest you write for a free copy of a new Monarch booklet just issued, full of model-kitchen pictures, entitled "Tomorrow's Kitchens." When writing, please also mention the type of range you are now using.
MALLEABLE IRON RANGE CO.
MONARCH RANGES
are built to last

Take it Easy
AT MILKING TIME

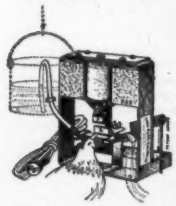
The famous Clean-Easy Trackster Milker is a sensation! A complete milker unit ... no pipe lines ... mounts on any standard dairy barn track. Easy to operate ... easy to keep clean and sanitary ... soon pays for itself. See your dealer or write Ben H. Anderson Mfg. Co., Madison 3, Wis. Dept. 31.

Spark Arrester

The use of spark arresters on farm home chimneys is showing such a decided increase that fires from this cause are less frequent. The use of spark-creating fuels is exceedingly dangerous unless such safeguards are installed. Of course, sparks should always be kept at a minimum by the frequent cleaning of chimneys. A soot-lined chimney is a serious menace to life and property.

Save Labor—Eliminate Worry

Use the "Lyon Electric Line"



Plan now to obtain the advantages which additional Lyon Equipment will give. If you are a Lyon user, you know the long service and low cost operation which LYON Equipment offers. Moreover, Lyon repairs for poultry equipment have been available continuously. The Lyon Debeaker and Lyon Brooder Assemblies are typical Lyon Labor-and-worry-savers.

Send for Details

LYON RURAL ELECTRIC CO.
Greensboro, N. C. San Diego, Calif.
"Headquarters for Electric Brooder Assemblies"

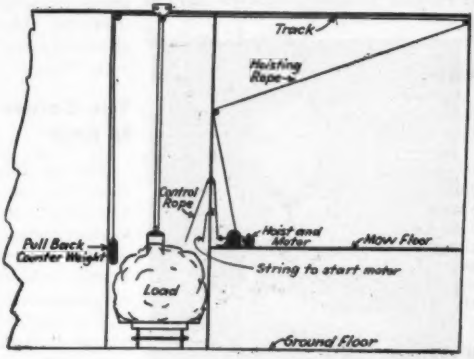
Questions and Answers

Pit Silo Hoist

▶**Question:** *I have a pit silo 14' in diameter, 30' under ground level, 4 feet above with a 6-foot wooden section above with a 6-foot door and overhead track 48 feet long with good hay carrier and cable. I have an overhead draw made of an old Model A Ford wheel and sweep to pull with a horse.*

The ensilage box that I use is 4 feet long, 2 feet wide at bottom and 4 feet at top, 26 inches deep. I use a box full of one feeding having around 25 registered Holstein cattle.

I would like to have a sketch with details or full information on making a hoist to pull with a 110-volt motor. What size motor would it require? I would like a safety clutch or brake to hold in place if anything should go wrong and a brake to leave empty box down.
C. R. M., Neb.



▶**Answer:** Since you are using a hay carrier, I see no reason why you should not use the system shown in our issue of April, 1942, page 9, for hoisting the ensliage out of your pit silo and for that matter, to carry it along the track to your feeding location. (See sketch.) The same outfit could be used for hoisting hay. The silage box should drop into the pit of its own weight when the carrier trips. The hoist could be located either in the barn or at the silo and the control rope placed wherever it would be convenient.

If you do not like this system, then I would suggest a motor driven chain hoist such as the Budgit hoist made by Shaw-Box Crane & Hoist Div. of Manning, Maxwell & Moore, Inc., Muskegon, Mich. This gear driven hoist and motor would hang directly over the silo and raise the bucket of ensilage on a hook. The connection would then have to be transferred to your carrier. The hoist is provided with automatic safety brake and can be operated either up or down. The cost of these hoists is from $120 upward depending upon the weight to be lifted, the speed of lifting and the length of chain.

Repairs for Heating Pads

▶**Question:** *Can you advise where one can get the elements or resistors that are in heating pads? I have two expensive ones but they don't work any more. Think it is because the elements or resistors have become useless because of age. Both pads are from two to three years old.* C. O. N., S. C.

▶**Answer:** Since the heating elements are built into a heating pad, replacement elements are not made for these units so far as I know.

If the trouble happened to be in an external switch, plug, cord or control, a repair man might be able to fix that for you. Heating pads should last longer than three years with reasonable care.

Saving Wet Feathers

▶**Question:** *I see in* ELECTRICITY ON THE FARM *mention of a discovery by the USDA of a way to save wet*

WRITE for BROWER'S Big Free Catalog

describing complete line of electric poultry equipment. Brower's Electric Watt-Saver fan-type Floor Brooder. Has insulated canopy. Ideal for cold or warm weather brooding. Automatic thermostat switch. 300 chick capacity, 48" x 48" canopy, 800 watt heater—$27.50. 500 chick capacity, 60" x 60" canopy—1000 watt heater—$32.70. 250 watt Infra-red ray heating bulb to use in homemade brooders — $1.75. Automatic thermostat brooder switch — $2.30. Chick Starting Batteries — water heaters — time switches — incubators and feed mixers. Brower's—the World's Largest Line of Poultry supplies — normally over 475 items. Save delay, order now.

BROWER MFG. CO. Dept. 66 Quincy, Ill.

chicken feathers. Can you give me the number of this bulletin or of some way to apply to the USDA for same? H. K. T., Texas

Answer: The method of saving chicken feathers which has been worked out by the U. S. D. A. is a chemical treatment which keeps the feathers from spoiling while they are being shipped to a renovating plant.

I do not think there is a bulletin on the subject but you can undoubtedly get further information by writing to the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Again—6v. D.C. Motor on 110v. A.C.

Question: *Can you advise a practical method of running a 6-volt motor (such as is used in a car heater) from 110 alternating current?*

R. R. S., Ill.

Answer: Small dc motors can be operated by using either the Tungar type constant potential rectifier or a suitable copper-oxide rectifier for converting 110-volt ac current to dc characteristics of low voltage. Such equipment has capacity from two to six dc amperes.

One assumes that the purpose in making the change is to utilize the power for motivating equipment. Such converted jobs usually have little practical utility.

Tubes for Rectifiers

Question: *I have a General Electric home charger using a 20 X672 mercury bulb. Please let me know where I may purchase this bulb?*

J. C., Pa.

Answer: Mercury type rectifier bulbs are available through your electric supply stores. Such equipment carries a priority, however, and your local State War Production Board will first have to issue you such priority before the dealer can supply you. Your County Agricultural Agent or County Agricultural War Board can advise you regarding your nearest priority issue office.

Electric Refrigerator from Ice Box

Question: *Could you please tell me how to convert a good ice box into an electric refrigerator?*

J. McF., Oregon

Answer: Ice boxes of good construction, preferably having 2½ to 3 inches insulation which is still in place and in good condition, can be converted for electric refrigeration. If your refrigerating equipment is of the unit assembly type and the cover dimensions correspond, you can insert the new unit into the top of your box by cutting out the top to fit. An airtight seal must be placed over all breaks through the inside lining of the box. If compressor and evaporator are separate units, you can locate the operating equipment in the basement immediately below the refrigerator location, and run the necessary copper tubing to the evaporator unit which is mounted in the ice section. To insure proper air circulation, it is usually necessary to completely remove the ice drip pan. It is a job for a refrigeration expert and cabinet maker.

It may be more economical and satisfactroy to purchase a used electric refrigerator box to suit the particular type of refrigerating equipment you have available.

Milk Cooler Operation

Question: *We have an eight can Niagara milk cooler, purchased in 1936. Besides the compressor, there is another smaller motor which operates an agitator which pumps water from one end of the cooler to the other.*

When new, the agitator had a timer on it but that wore out and our service man now has it wired so that it runs whenever the compressor runs. He says that it prevents the formation of ice (it does, too) and that it cools milk better, also that is the way the newer coolers are fixed. Our dairy field man feels that it is uneconomical for both motors to run together whenever the compressor starts.

Should the agitator be wired to run by a separate switch, for an hour or so after or during milking, or should it be left as it now is?

D. C. B., Ohio

Answer: The pump on your Niagara cooler should be controlled by a time switch and not by the starting and stopping of the compressor unit. There are several reasons for this. In the first place, in order to get quick efficient cooling the water should start flowing as soon as the milk is put in and should continue to flow until the milk temperature has been brought down. Another reason is that a motor makes a heavy draft of current on the line in starting and the two motors should not be started on the same circuit simultaneously unless you have very heavy circuit wire and separate pro-

MAKOMB ELECT-O-STAT
FOR BETTER BROODING RESULTS
USES LESS CURRENT
Elect-O-Stat offers the real fan developed air conditioning that brings Best-O-Luck to your chicks. The Elect-O-Stat method (Pat. 2362860) sends vitalized tempered warmth right out to the curtains to stop any cold drafts over your 'downies'. No hot spots, no discomfort inspired crowding. 52" or 60" square, with fan. Also four other models. See your Makomb dealer. Free literature.
THE MAKOMB LINE 6 Madison Ave. Macomb, Ill.
World's Largest Manufacturer of Brooders

New money-saving, time-saving Deltacraft book —
"How to Get the Most Out of Your Farm Workshop"
Only 25c for 40 pages of tool tips, plans and pictures . . .
Packed with facts and practical help. Published by Delta, world's largest maker of power tools for home and farm workshop (now 100% in war work). How to lay out your shop, do repairs and new construction faster, safer, easier — saving time, money, and mileage to town. Power Tools and Their Uses. Illustrated descriptions and instructions. Circular Saw, Jointer, Grinder, Drill Press, Band Saw, Lathe, Scroll Saw, Sanders, Shaper—for working wood, metal, plastics. Plans and Projects. How to splice timbers; how to build self-feeder, hog house, feeding barn, chick feeder, gates, etc. . . . Beautifying your home — making furniture, etc. . . . Plus shop layout pictures, tables on nails, screws, hinges. Make yours a shop to be proud of, where it's fun to work . . . Send 25 cents in coin or stamps to—
DELTA MILWAUKEE Power Tools
The Delta Mfg. Co. 727A E. Vienna Ave. Milwaukee 1, Wis.
SEND TODAY

Get A
Gardner Hi-Line Controller
Save time, get set for more milk, beef or pork production with a Gardner hi-shock hi-line controller — the best engineered electric fence unit. Thousands are in nation-wide use, many have given six years of successful service. Ask your dealer today, or write direct for free folder.
For Sale Now!
Gardner Mfg. Co.
5313 Kansas St. Horicon, Wis.

tection for each motor. Another objection is, that if the two motors are operated on the same control, under certain weather conditions and depending upon the amount of milk cooled, the pump will start and stop several times before the milk is completely cooled. This slows down the cooling process, which forfeits one of the big advantages in using the flowing water.

Pumping Water—No Electricity

▶ **Question:** *What kind of a hook-up do I need to get running water into my house from an 18-foot well? We have no electric service at present.* J. L. L., New York.

Answer: Since you have a shallow well presumably within piping distance from the house, I would suggest connecting the well-suction pipe with a pump located in the house basement by means of a pipe laid below frost penetration depth underground.

For engine operation and for subsequent substitution of an electric motor for the engine, I would suggest a reciprocating type of shallow well pump having a capacity of 125 to 200 gallons per hour. A pressure tank of 150 to 300 gallons capacity is desirable so that the engine will not have to be started frequently. The pressure switch which usually comes with the pump as a part of the electric motor hookup, can be wired in series with the magneto lead to the spark plug of the engine. The engine will have to be started manually but will stop whenever the pressure in the supply tank attains the usual 40 to 45-pound limit.

Heavy Hogs—More Lard

Large hogs not only have more fat but the fat yields more lard than the fat of smaller hogs, recent tests indicate. Fatty cuts—back fat, plate fat, leaf and cutting fats—of hogs weighing 175 pounds yielded about 75 per cent of rendered lard. The corresponding percentage for hogs weighing 375 pounds is 87 per cent.—USDA.

Let the Motor Help Clean Seed

Most farmers know the value of having seed grain clean and free from trash, weed seeds and light immature kernels. When one has to turn a fanning mill all day by hand, there is a temptation to "let 'er go" and take what comes. A ¼ horsepower motor will do this job without a grunt. It will cost about a cent an hour to run the motor, and since it will run steadily at constant speed, it will do a better, more uniform job of cleaning than with hand turning.

Lewis Johnson and son Carl who operate adjoining farms in Ohio are shown in this picture as they clean oats for spring seeding. Just another example of how electric power is aiding in the food production program.

If you have much grain to clean and have it in an overhead bin, a spout from the bin to the fanning mill hopper will save a lot of handling.

What's New

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York 18, N. Y.*

Motor for Dusty Places

A new general purpose motor in sizes of 1½ to 15 hp has just been placed on the market by Century Electric Co., St. Louis, Mo. The

upper half of the end brackets are closed to exclude dripping liquids, falling solids, etc. Two built-in fans cool the windings and bearings. Available on priorities.

New Publications

(Publications are obtainable from the addresses given in the description. Some states make small charges for bulletins sent outside the state.)

● SEWING MACHINES. Farmer's Bul. 1944, USDA, Washington, D.C., 24 pp., illus. Simple instructions for cleaning and adjusting sewing machines. Easy to understand. Good illustrations. Contains a table of machine troubles and remedies and a chart of needle descriptions for different machines and sizes for different threads.

● TAKE CARE OF PRESSURE CANNERS. A folder No. AWI-65 with illus. of different types of canners and pressure controls with instructions on cleaning, adjusting and using. COOKING WITH SOYA FLOUR AND GRITS. 16p pamphlet AWL-73, mostly recipes—soup to pie.

● PREPARING HOME GROWN VEGETABLES AND FRUITS FOR FREEZING. A folder, No. AWI-63, giving concise instructions and complete charts on preparation, freezing and use of frozen fruits and vegetables. All three from Agric. Research Administration, USDA, Washington, D.C.

When you bought your SURGE *Milker*
You bought much MORE than just a good milking machine!

Every four minutes of every working day a shining, bright, new Surge rolls off our production lines

If you have had to wait a long time for YOUR new Surge, it is not because we are not making a lot of them, but because so many of your neighbors also like the Surge Milker and the Surge Service that makes it keep right on being a good milker.

You also bought
the right to be sure of ample repair parts at the right price *and* Prompt Surge Service at reasonable cost

You can still be sure! . . . Even if your own Surge Service Man is now far away, Surge Service is still available—just drop a card to your nearest Babson Branch.

Whether you bought your Surge last week or twenty years ago, you bought a mighty good machine and we are here to *make it keep on being a good machine.*

BABSON BROS. CO.
2843 West 19th St., Chicago 23, Ill.

SYRACUSE • MINNEAPOLIS • KANSAS CITY • LOS ANGELES • SEATTLE • HOUSTON

. . . turn more farm jobs over to electricity and have more time for important work!

Is the farm labor shortage slowing down production on your farm? There are scores of jobs around the farm formerly done by men which can be turned over to electric power. This magazine will tell you about many of them.

Electricity does the work at a fraction of the cost of doing it by hand. May we help you?

Your Electric Service Company

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